

Alberta's Supply Outlook Model: Education and Skills, 2006-2016

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Data Development and Evaluation

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Alberta

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Highlights

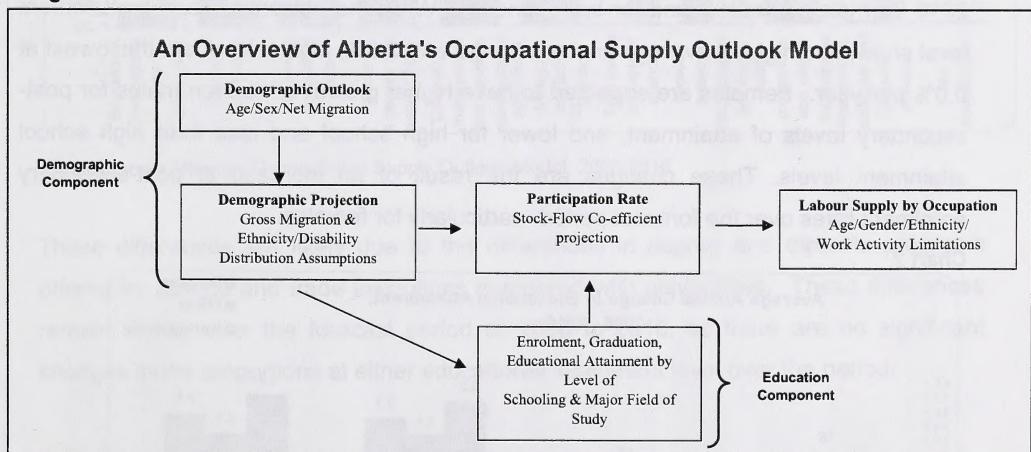
- The proportion of Albertans with a post-secondary education is expected to increase from 48.8% to 54.5% over the forecast period of 2006 to 2016.
- More females than males, 58.9% compared to 50.2%, are expected to have obtained a post-secondary education by 2016.
- There will be more people who have graduated from the fields of education, humanities, social sciences, engineering, and mathematical and computer sciences at the university level than from college and trade institutions.
- It is expected that there will be more Albertans with fine arts, commerce, applied sciences and health professions qualifications at the college and trade level than the university level.
- At the college and trade level a higher percentage of males than of females will have qualifications in the applied science technologies and trades field, 60.2% compared to 10%. Females are expected to have higher percentages with education, commerce, arts, management, social sciences, humanities, and health qualifications.
- Of those Albertans with university degrees, females are more likely than males to have studied in education and health fields. Meanwhile, males are more likely to have engineering and mathematical and computer sciences qualifications.
- Ways of attracting people of the non-traditional gender into trades and health fields of study should be looked at to help ease potential labour shortages.

Each year Alberta Human Resources and Employment (AHRE) produces Alberta's Occupational Supply Outlook Model (AOSOM)¹. The AOSOM provides labour supply forecasts for 140 occupational groups covering a ten-year forecast period. The model contains 30 linked sub-models and over 100,000 data series.

The education sub-model is a critical component of the AOSOM. The model forecasts the number of enrolments and graduates across eleven major fields of study, which are listed in Appendix A, for different levels of schooling. These forecasts can then be translated into the occupations where these people are expected to look for employment. Figure 1 provides an overview of the AOSOM and the role of the education component in forecasting labour supply.

The first section of the report looks at the projected educational attainment levels of Alberta's population. The remainder of the report gives an analysis of the major fields of study at different post-secondary education levels and by gender. Following the text, Appendix B details the assumptions underlying the education forecasts and Appendix C shows the results of the model projections.

Figure 1

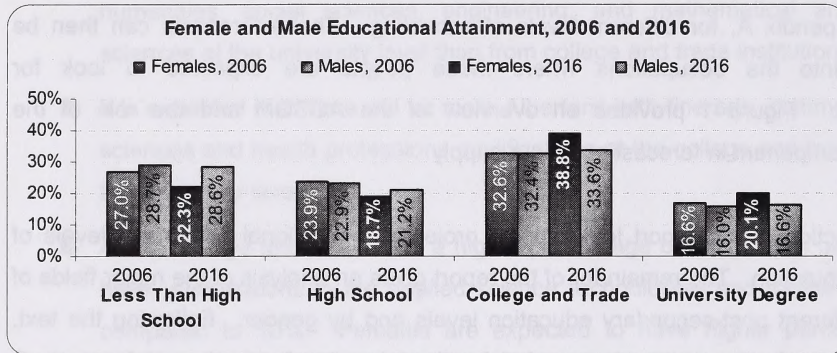


¹ See http://www.hre.gov.ab.ca/documents/LMI/LMI-LMF_occ_demand_supply.pdf for more reports on Alberta's Occupational Supply Outlook

Educational Attainment

Over the forecast period of 2006 to 2016, the proportion of people with a post-secondary education is expected to increase from 48.8% to 54.5%. Meanwhile, the other categories, less than high school and high school, are expected to decrease. Chart 1 compares the proportion of each gender projected to have attained each level of education in 2006 and 2016. It is expected that females will have larger proportions with post-secondary education in 2016 than males, 58.9% compared to 50.2%.

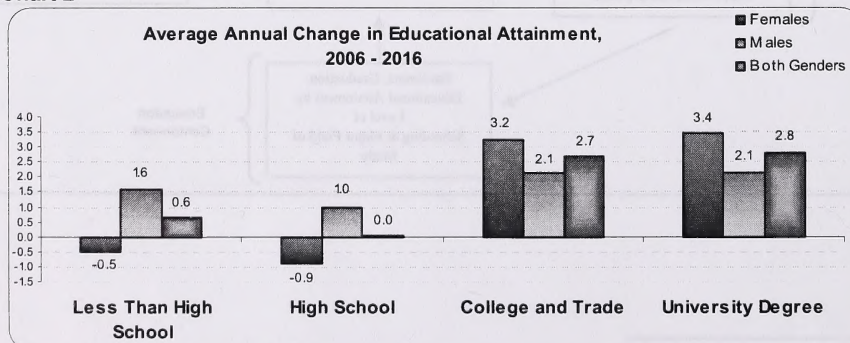
Chart 1



Data Source: Alberta's Occupational Supply Outlook Model, 2006-2016

Chart 2 shows the average annual change in educational attainment between 2006 and 2016 for males, females, and for both genders. While the university degree attainment level shows the highest average annual change with 2.8%, high school has the lowest at 0.0% per year. Females are expected to have higher growth rates than males for post-secondary levels of attainment, and lower for high school and less than high school attainment levels. These changes are the result of an increase in post-secondary enrolment rates over the forecast period, particularly for females.

Chart 2

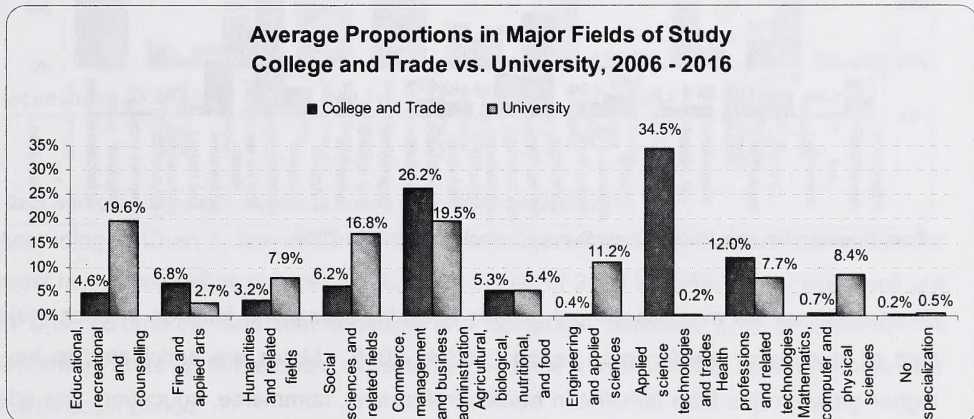


Data Source: Alberta's Occupational Supply Outlook Model, 2006-2016

Major Fields of Study: College vs. University

Chart 3 compares the average proportions in each major field of study between college and trade and university levels of educational attainment. There are certain major fields of study that have different representations at the college and trade level than at the university level. There are higher proportions with education, humanities, social sciences, engineering, and mathematical and computer sciences qualifications from universities than from college and trade institutions. On the other hand, there are larger proportions with fine arts, commerce, applied sciences, and health professions qualifications at the college and trade level than at the university level. The only major fields of study where the proportions are similar between college and trade and university are agricultural, biological, nutritional, and food sciences.

Chart 3



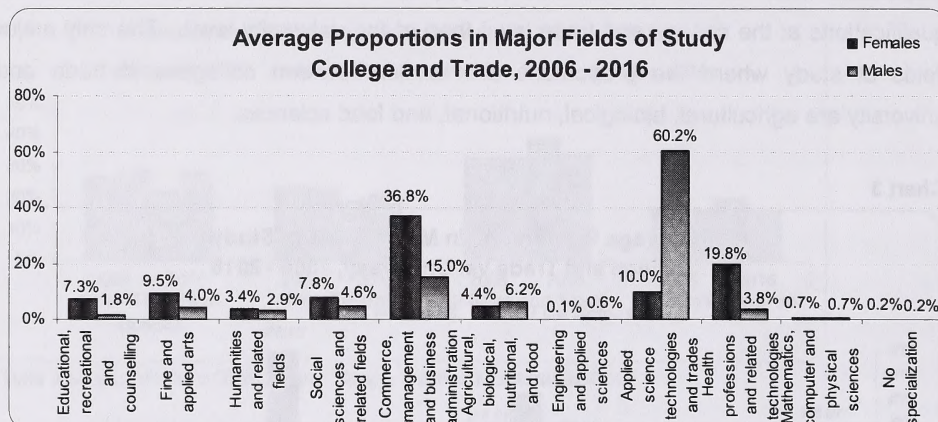
Data Source: Alberta's Occupational Supply Outlook Model, 2006-2016

These differences are likely due to the differences in degree and diploma programs offered by college and trade institutions compared with universities. These differences remain similar over the forecast period of 2006 to 2016, as there are no significant changes in the proportions at either educational attainment level over the period.

Major Fields of Study: College and Trade

Chart 4 compares the average proportions over the forecast period 2006 to 2016 of all college and trade graduates in each major field of study by gender. There are higher proportions of females than males with qualifications in most major fields of study, except for applied science technologies and trades, with 60.2% of males compared to 10% of females. Females have larger proportions with commerce, management, business administration, and health qualifications.

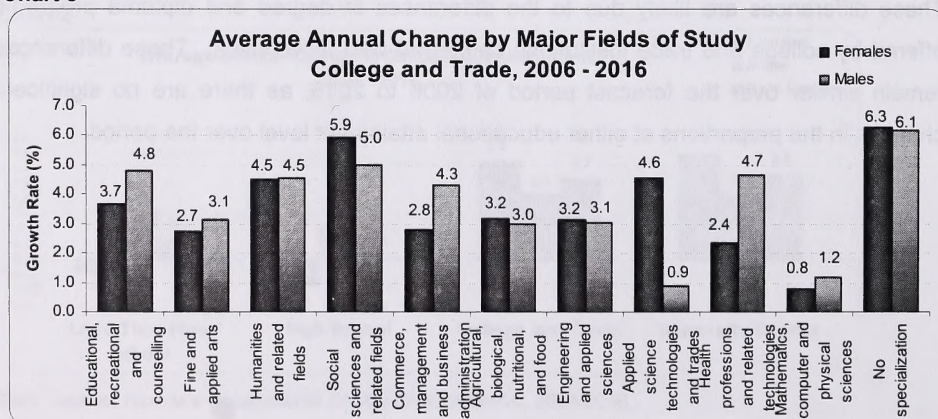
Chart 4



Data Source: Alberta's Occupational Supply Outlook Model, 2006-2016

Chart 5 shows the average annual growth rates for males and females in each major field of study over the forecast period 2006 to 2016. Males are anticipated to have higher growth rates than females in health professions, commerce, education, fine arts, and mathematical and computer sciences. Females are expected to have higher growth rates in applied and social sciences.

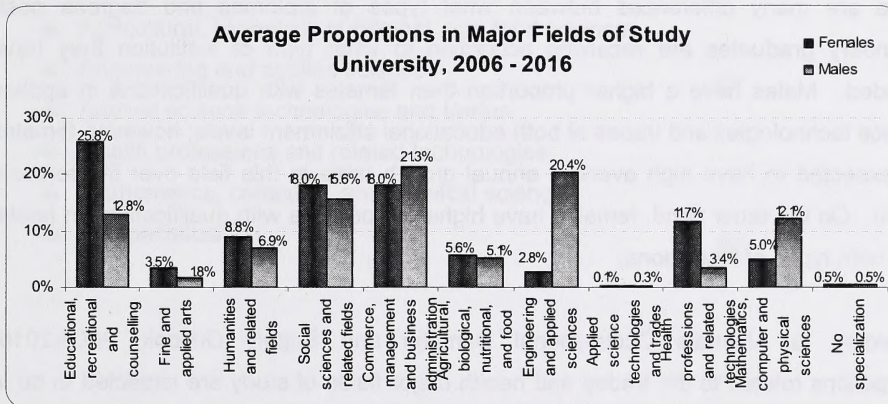
Chart 5



Data Source: Alberta's Occupational Supply Outlook Model, 2006-2016

Chart 6 shows the average proportions over the forecast period of 2006 to 2016 of all university graduates in each major field of study by gender. A higher proportion of females than males are expected to have qualifications in education, arts, humanities, social sciences, and health fields of study. Males have higher proportions with commerce, engineering, and mathematical and computer sciences qualifications. These are the fields that have traditionally been dominated by one gender or the other.

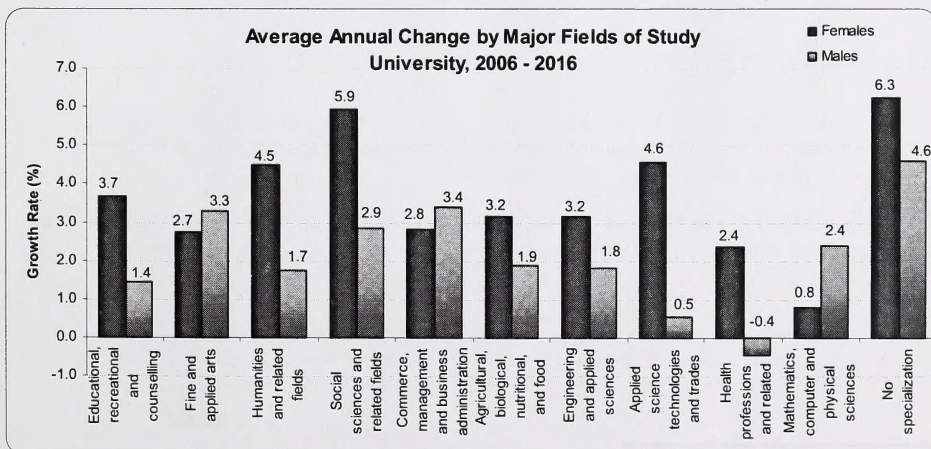
Chart 6



Data Source: Alberta's Occupational Supply Outlook Model, 2006-2016

According to Chart 7, females have higher average annual growth rates than males for most major fields of study over the forecast period of 2006 to 2016. The exceptions are in arts, commerce, and mathematical and computer sciences. This is because the enrolment rates for females are expected to increase at a faster rate than for males over the forecast period.

Chart 7

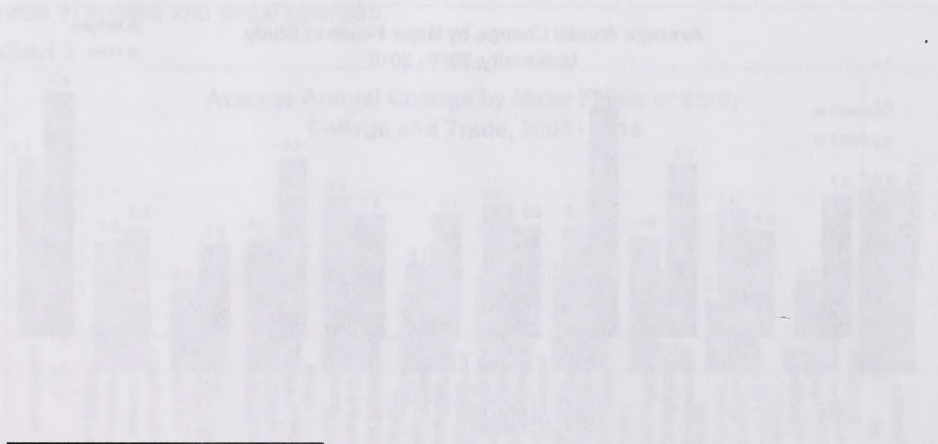


Data Source: Alberta's Occupational Supply Outlook Model, 2006-2016

Over the coming decade, 2006 to 2016, the overall level of educational attainment in Alberta is expected to increase as more people enroll in post-secondary institutions. It is anticipated that the enrolment rates of post-secondary education for females will increase more over the forecast period than for males, resulting in a higher proportion of females having obtained a post-secondary education.

There are many differences between what types of diplomas and degrees post-secondary graduates are receiving according to what type of institution they have attended. Males have a higher proportion than females with qualifications in applied science technologies and trades at both educational attainment levels; however, females are expected to have high average annual growth rates in this field over the forecast period. On the other hand, females have higher proportions with qualifications in health from both types of institutions.

According to Alberta's Occupational Demand and Supply Outlook, 2006-2016² occupations related to the trades and health major fields of study are expected to be in need of labour over the coming decade. Therefore, ways of attracting people of the non-traditional gender into these fields of study could be looked at to help ease potential labour shortages.



² Available at http://www.hre.gov.ab.ca/documents/LMI/LMI-LMF_occ_demand_supply.pdf

Major Fields of Study

- ↓ Educational, recreational, and counseling services
- ↓ Fine and applied arts
- ↓ Humanities and related fields
- ↓ Social sciences and related fields
- ↓ Commerce, management and business administration
- ↓ Agricultural, biological, nutritional, and food sciences
- ↓ Engineering and applied sciences
- ↓ Applied science technologies and trades
- ↓ Health professions and related technologies
- ↓ Mathematics, computer, and physical sciences
- ↓ No specialization

Education Assumptions

A number of assumptions are used to derive the results of this forecast. The assumptions used to generate the results in Appendix C are described below.

Enrolment and Graduation

- The number of people who attend or complete school is calculated as a share of the total number in that age or gender group. This proportion is based on historic shares.
- Enrolment is defined as being full load equivalent for parchment courses, as it is only those who take parchment level courses who will graduate and thus affect the level of educational attainment in society.
- The number of students likely to graduate each year is determined based on the time distribution of enrolment and data on program lengths.
- College and university enrolment rates are assumed to continue to rise in the future, while graduation rates are kept constant.
- The age and gender distributions for new university graduates are projected with the same age and gender distributions from the educational attainment data.
- To calculate the number of college and trades graduates, the ratio of college and trades graduates to the general population is used. This value is then adjusted to ensure that the ratio of university graduates to college and trades graduates remains constant.
- The overall ratio of university to college and trades graduates is applied to the different age groups to project the number of college and trades graduates within each age group.
- Overall drop out rates and mature student rates are used for the different major fields of study. Mature students are students who either did not obtain a high school diploma or did not have sufficient marks to gain entry into a post-secondary institution, but were then admitted years later.

Educational Attainment

- Those who obtain a university certificate have occupational outcomes more similar to college graduates than university degree graduates, and thus are included in the "college and trade" level.
- To calculate the number of people with university, college and trades, and high school education, a stock-flow approach² is used.

² **Stock-Flow Approach:** A method in estimating the future population of people in a group of interest. To find the forecasted population, the population from the previous year is adjusted to add those expected to enter that group and subtract those that are expected to leave that group. **Example:**

$$\begin{array}{ccccccc}
 \text{Number of} & & \text{Number of} & & \text{Recent graduates} & & \text{People leaving} \\
 \text{people with} & & \text{people with} & & \text{of College/Trades} & & \text{group due to} \\
 \text{College/Trades} & = & \text{College/Trades} & \text{plus} & & \text{minus} & \text{death,} \\
 \text{training} & & \text{training} & & & & \text{retirement, etc.} \\
 t+1 & & t & & t+1 & & t+1
 \end{array}$$

- Those with less than a high school education are determined to be those not already accounted for in other educational attainment categories.
- Less than high school educational attainment is adjusted to reflect the estimated portion of mature students in post-secondary institutions that do not have a high school diploma. High school educational attainment is also adjusted to subtract recent graduates from university and college and trades.
- The overall enrolment rate for mature students is used for all age groups within the mature student category.
- To project educational attainment by major field of study, the historic relative enrolment rate is maintained over the projection period.
- The share of new graduates by major field of study and migration are constant over time.
- University transfer programs are included as university enrollment and university certificates are classified as college and technical.

Educational Attainment

Both Genders	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average, 2006-2016
Less Than High School	748,421	751,642	755,256	758,823	765,856	772,542	778,379	783,844	788,630	793,105	797,424	
% of Total	27.8%	27.4%	27.1%	26.7%	26.5%	26.3%	26.1%	26.0%	25.8%	25.7%	25.5%	
Growth Rate (%)	0.48	0.43	0.48	0.47	0.93	0.87	0.76	0.70	0.61	0.57	0.54	0.62
High School	628,392	633,528	636,979	639,285	639,839	640,005	639,070	637,020	633,959	629,685	624,329	
% of Total	23.4%	23.1%	22.8%	22.5%	22.2%	21.8%	21.5%	21.1%	20.7%	20.4%	20.0%	
Growth Rate (%)	1.02	0.82	0.54	0.36	0.09	0.03	-0.15	-0.32	-0.48	-0.67	-0.85	0.03
College and Trade	873,509	902,766	930,912	958,308	984,421	1,010,516	1,035,871	1,060,456	1,084,404	1,107,416	1,129,437	
% of Total	32.5%	32.9%	33.3%	33.7%	34.1%	34.4%	34.8%	35.1%	35.5%	35.8%	36.2%	
Growth Rate (%)	3.54	3.35	3.12	2.94	2.72	2.65	2.51	2.37	2.26	2.12	1.99	2.69
University Degree	438,039	453,703	468,667	483,108	496,621	510,265	523,427	536,087	548,373	560,152	571,396	
% of Total	16.3%	16.5%	16.8%	17.0%	17.2%	17.4%	17.6%	17.8%	17.9%	18.1%	18.3%	
Growth Rate (%)	3.75	3.58	3.30	3.08	2.80	2.75	2.58	2.42	2.29	2.15	2.01	2.79
Females	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average, 2006-2016
Less Than High School	360,330	359,332	358,605	357,950	359,103	360,065	359,208	356,917	353,007	347,648	341,000	
% of Total	27.0%	26.4%	25.9%	25.4%	25.1%	24.7%	24.3%	23.9%	23.4%	22.9%	22.3%	
Growth Rate (%)	-0.22	-0.28	-0.20	-0.18	0.32	0.27	-0.24	-0.64	-1.10	-1.52	-1.91	-0.52
High School	318,753	318,440	317,202	315,336	312,538	309,521	305,920	301,716	296,960	291,543	285,541	
% of Total	23.9%	23.4%	22.9%	22.4%	21.8%	21.3%	20.7%	20.2%	19.7%	19.2%	18.7%	
Growth Rate (%)	0.11	-0.10	-0.39	-0.59	-0.89	-0.97	-1.16	-1.37	-1.58	-1.82	-2.06	-0.98
College and Trade	435,417	453,064	470,159	486,876	502,943	518,992	534,659	549,902	564,757	579,034	592,672	
% of Total	32.6%	33.3%	33.9%	34.5%	35.1%	35.6%	36.2%	36.8%	37.5%	38.1%	38.8%	
Growth Rate (%)	4.30	4.05	3.77	3.56	3.30	3.19	3.02	2.85	2.70	2.53	2.36	3.24
University Degree	221,987	231,716	241,099	250,223	258,861	267,583	276,051	284,244	292,219	299,894	307,232	
% of Total	16.6%	17.0%	17.4%	17.7%	18.1%	18.4%	18.7%	19.0%	19.4%	19.8%	20.1%	
Growth Rate (%)	4.62	4.38	4.05	3.78	3.45	3.37	3.16	2.97	2.81	2.63	2.45	3.42
Males	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average, 2006-2016
Less Than High School	388,091	382,310	396,651	400,873	406,753	412,477	419,171	426,927	435,623	445,457	456,424	
% of Total	28.7%	28.4%	28.2%	28.0%	28.0%	27.9%	27.9%	28.0%	28.1%	28.3%	28.6%	
Growth Rate (%)	1.14	1.09	1.11	1.06	1.47	1.41	1.62	1.85	2.04	2.26	2.46	1.59
High School	309,640	315,088	319,777	323,948	327,300	330,484	333,150	335,304	336,999	338,142	338,789	
% of Total	22.9%	22.8%	22.8%	22.7%	22.5%	22.4%	22.2%	22.0%	21.8%	21.5%	21.2%	
Growth Rate (%)	1.97	1.76	1.49	1.30	1.03	0.97	0.81	0.65	0.51	0.34	0.19	1.00
College and Trade	438,092	449,703	460,753	471,432	481,478	491,524	501,213	510,554	519,648	528,382	536,766	
% of Total	32.4%	32.6%	32.8%	33.0%	33.1%	33.3%	33.4%	33.5%	33.6%	33.6%	33.6%	
Growth Rate (%)	2.80	2.65	2.46	2.32	2.13	2.09	1.97	1.86	1.78	1.68	1.59	2.12
University Degree	216,053	221,987	227,568	232,885	237,760	242,682	247,376	251,843	256,154	260,258	264,164	
% of Total	16.0%	16.1%	16.2%	16.3%	16.4%	16.4%	16.5%	16.5%	16.5%	16.6%	16.6%	
Growth Rate (%)	2.88	2.75	2.51	2.34	2.09	2.07	1.93	1.81	1.71	1.60	1.50	2.11

Major Fields of Study: College and Trade

Both Genders	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average, 2006-2016
Educational, recreational and counselling services												
% of Total	37,947	39,810	41,626	43,407	45,132	46,851	48,534	50,177	51,782	53,334	54,826	
Growth Rate (%)	4.3%	4.4%	4.5%	4.5%	4.6%	4.6%	4.7%	4.7%	4.8%	4.8%	4.9%	
	5.24	4.91	4.56	4.28	3.97	3.81	3.59	3.38	3.20	3.00	2.80	3.89
Fine and applied arts												
% of Total	58,809	60,899	62,914	64,877	66,757	68,630	70,450	72,214	73,930	75,573	77,139	
Growth Rate (%)	6.7%	6.7%	6.8%	6.8%	6.8%	6.8%	6.8%	6.8%	6.8%	6.8%	6.8%	
	3.77	3.55	3.31	3.12	2.90	2.81	2.65	2.50	2.38	2.22	2.07	2.84
Humanities and related fields												
% of Total	25,113	26,580	28,011	29,412	30,771	32,117	33,432	34,715	35,968	37,181	38,352	
Growth Rate (%)	2.9%	2.9%	3.0%	3.1%	3.1%	3.2%	3.2%	3.3%	3.3%	3.4%	3.4%	
	6.32	5.84	5.38	5.00	4.62	4.38	4.09	3.84	3.61	3.37	3.15	4.51
Social sciences and related fields												
% of Total	46,759	50,204	53,579	56,905	60,140	63,376	66,560	69,687	72,763	75,764	78,683	
Growth Rate (%)	5.4%	5.6%	5.8%	5.9%	6.1%	6.3%	6.4%	6.6%	6.7%	6.8%	7.0%	
	8.06	7.37	6.72	6.21	5.69	5.38	5.02	4.70	4.41	4.13	3.85	5.59
Commerce, management and business administration												
% of Total	222,542	231,406	240,019	248,454	256,598	264,718	272,658	280,405	287,984	295,314	302,377	
Growth Rate (%)	25.5%	25.6%	25.8%	25.9%	26.1%	26.2%	26.3%	26.4%	26.5%	26.7%	26.8%	
	4.22	3.98	3.72	3.51	3.28	3.16	3.00	2.84	2.70	2.55	2.39	3.22
Agricultural, biological, nutritional, and food sciences												
% of Total	45,319	47,011	48,660	50,280	51,850	53,412	54,941	56,436	57,900	59,318	60,690	
Growth Rate (%)	5.2%	5.2%	5.2%	5.2%	5.3%	5.3%	5.3%	5.3%	5.3%	5.4%	5.4%	
	3.94	3.73	3.51	3.33	3.12	3.01	2.86	2.72	2.59	2.45	2.31	3.05
Engineering and applied sciences												
% of Total	3,121	3,239	3,354	3,467	3,576	3,685	3,790	3,893	3,994	4,091	4,185	
Growth Rate (%)	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	
	4.01	3.78	3.56	3.36	3.17	3.02	2.86	2.72	2.58	2.43	2.30	3.07
Applied science technologies and trades												
% of Total	320,996	326,916	332,418	337,650	342,416	347,197	351,724	355,999	360,087	363,896	367,425	
Growth Rate (%)	36.7%	36.2%	35.7%	35.2%	34.8%	34.4%	34.0%	33.6%	33.2%	32.9%	32.5%	
	1.95	1.84	1.68	1.57	1.41	1.40	1.30	1.22	1.15	1.06	0.97	1.41
Health professions and related technologies												
% of Total	104,770	108,343	111,756	115,069	118,191	121,341	124,400	127,359	130,241	133,012	135,658	
Growth Rate (%)	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	12.0%	
	3.61	3.41	3.15	2.96	2.71	2.67	2.52	2.38	2.26	2.13	1.99	2.71
Mathematics, computer and physical sciences												
% of Total	6,385	6,466	6,541	6,611	6,674	6,737	6,797	6,853	6,906	6,955	6,999	
Growth Rate (%)	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.6%	0.6%	0.7%	0.6%	
	1.37	1.27	1.15	1.07	0.96	0.94	0.88	0.82	0.78	0.71	0.64	0.96
No specialization												
% of Total	1,748	1,893	2,036	2,176	2,315	2,452	2,587	2,720	2,851	2,979	3,104	
Growth Rate (%)	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.3%	0.3%	0.3%	0.3%	
	9.10	8.27	7.53	6.92	6.35	5.93	5.51	5.14	4.81	4.49	4.20	6.20

Major Fields of Study: College and Trade (Cont.)

											Average,
											2006-2016
Females											
Educational, recreational and counselling services											
% of Total	31,079	32,521	33,922	35,294	36,619	37,940	39,231	40,489	41,715	42,893	44,020
Growth Rate (%)	7.1%	7.2%	7.2%	7.2%	7.3%	7.3%	7.3%	7.4%	7.4%	7.4%	7.4%
Fine and applied arts											
% of Total	42,239	43,690	45,084	46,439	47,729	49,016	50,263	51,468	52,635	53,744	54,792
Growth Rate (%)	9.7%	9.6%	9.6%	9.5%	9.5%	9.4%	9.4%	9.4%	9.3%	9.3%	9.2%
Humanities and related fields											
% of Total	13,936	14,747	15,536	16,310	17,058	17,800	18,526	19,232	19,921	20,585	21,221
Growth Rate (%)	6.3%	5.8%	5.3%	4.9%	4.5%	4.3%	4.0%	3.8%	3.5%	3.6%	3.6%
Social sciences and related fields											
% of Total	29,350	31,669	33,946	36,192	38,384	40,574	42,731	44,851	46,933	48,958	50,920
Growth Rate (%)	6.7%	7.0%	7.2%	7.4%	7.6%	7.8%	8.0%	8.2%	8.3%	8.5%	8.6%
Commerce, management and business administration											
% of Total	163,836	169,536	175,041	180,409	185,552	190,682	195,676	200,521	205,230	209,738	214,025
Growth Rate (%)	3.6%	3.4%	3.2%	3.0%	2.8%	2.7%	2.6%	2.4%	2.3%	2.2%	2.0%
Agricultural, biological, nutritional, and food sciences											
% of Total	19,388	20,147	20,885	21,607	22,303	22,999	23,679	24,341	24,987	25,609	26,204
Growth Rate (%)	4.5%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%	4.4%
Engineering and applied sciences											
% of Total	665	681	705	730	754	777	800	822	844	865	885
Growth Rate (%)	0.2%	0.2%	0.2%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Applied science technologies and trades											
% of Total	40,544	42,897	45,207	47,486	49,708	51,926	54,110	56,255	58,360	60,407	62,388
Growth Rate (%)	9.3%	9.5%	9.6%	9.8%	9.9%	10.0%	10.1%	10.2%	10.3%	10.4%	10.5%
Health professions and related technologies											
% of Total	90,102	92,777	95,327	97,798	100,126	102,468	104,738	106,926	109,046	111,064	112,966
Growth Rate (%)	20.7%	20.5%	20.3%	20.1%	19.9%	19.7%	19.6%	19.4%	19.3%	19.2%	19.1%
Mathematics, computer and physical sciences											
% of Total	3,386	3,423	3,456	3,486	3,513	3,540	3,565	3,588	3,609	3,628	3,644
Growth Rate (%)	0.8%	0.8%	0.7%	0.7%	0.7%	0.7%	0.7%	0.6%	0.6%	0.6%	0.6%
No specialization											
% of Total	902	978	1,052	1,126	1,198	1,270	1,340	1,410	1,478	1,544	1,608
Growth Rate (%)	9.2%	8.3%	7.6%	6.9%	6.4%	5.9%	5.5%	5.1%	4.8%	4.4%	4.1%

Major Fields of Study: College and Trade (Cont.)

Males	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average, 2005-2016
Educational, recreational and counselling services												
% of Total	6.868	7.290	7.704	8.113	8.513	8.911	9.303	9.688	10.068	10.441	10.807	
Growth Rate (%)	1.6%	1.6%	1.7%	1.8%	1.8%	1.7%	1.9%	1.9%	1.9%	2.0%	2.0%	
	6.62	6.14	5.68	5.31	4.94	4.67	4.39	4.14	3.92	3.70	3.51	4.82
Fine and applied arts												
% of Total	16.570	17.209	17.830	18.439	19.029	19.614	20.187	20.746	21.295	21.829	22.347	
Growth Rate (%)	3.8%	3.8%	3.9%	3.9%	4.0%	4.0%	4.0%	4.1%	4.1%	4.1%	4.2%	
	4.09	3.85	3.61	3.41	3.20	3.08	2.92	2.77	2.65	2.50	2.37	3.13
Humanities and related fields												
% of Total	11.177	11.833	12.474	13.103	13.713	14.317	14.907	15.483	16.048	16.597	17.131	
Growth Rate (%)	2.6%	2.6%	2.7%	2.8%	2.8%	2.9%	3.0%	3.0%	3.1%	3.1%	3.2%	
	6.35	5.87	5.42	5.04	4.66	4.40	4.12	3.87	3.65	3.42	3.22	4.55
Social sciences and related fields												
% of Total	17.409	18.536	19.633	20.713	21.756	22.802	23.828	24.836	25.830	26.806	27.763	
Growth Rate (%)	4.0%	4.1%	4.3%	4.4%	4.5%	4.6%	4.8%	4.9%	5.0%	5.1%	5.2%	
	7.04	6.47	5.92	5.50	5.04	4.81	4.50	4.23	4.00	3.78	3.57	4.99
Commerce, management and business administration												
% of Total	58.706	61.870	64.978	68.045	71.046	74.036	76.982	79.884	82.753	85.576	88.353	
Growth Rate (%)	13.4%	13.8%	14.1%	14.4%	14.8%	15.1%	15.4%	15.6%	15.9%	16.2%	16.5%	
	5.77	5.39	5.02	4.72	4.41	4.21	3.98	3.77	3.59	3.41	3.25	4.32
Agricultural, biological, nutritional, and food sciences												
% of Total	25.931	26.863	27.776	28.673	29.547	30.413	31.262	32.095	32.912	33.709	34.486	
Growth Rate (%)	5.9%	6.0%	6.0%	6.1%	6.1%	6.2%	6.2%	6.3%	6.3%	6.4%	6.4%	
	3.79	3.60	3.40	3.23	3.05	2.93	2.79	2.66	2.55	2.42	2.30	2.97
Engineering and applied sciences												
% of Total	2.466	2.558	2.648	2.737	2.823	2.908	2.990	3.071	3.150	3.226	3.300	
Growth Rate (%)	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	0.6%	
	3.99	3.75	3.53	3.34	3.15	3.00	2.84	2.70	2.56	2.42	2.29	3.05
Applied science technologies and trades												
% of Total	280.452	284.019	287.212	290.165	292.709	295.271	297.614	299.744	301.727	303.490	305.037	
Growth Rate (%)	64.0%	63.2%	62.3%	61.5%	60.8%	60.1%	59.4%	58.7%	58.1%	57.4%	56.8%	
	1.36	1.27	1.12	1.03	0.88	0.88	0.79	0.72	0.66	0.58	0.51	0.89
Health professions and related technologies												
% of Total	14.668	15.567	16.429	17.271	18.065	18.873	19.662	20.433	21.195	21.948	22.692	
Growth Rate (%)	3.3%	3.5%	3.6%	3.7%	3.8%	3.8%	3.9%	4.0%	4.1%	4.2%	4.2%	
	6.63	6.13	5.54	5.12	4.60	4.47	4.18	3.92	3.73	3.55	3.39	4.66
Mathematics, computer and physical sciences												
% of Total	3.000	3.044	3.085	3.124	3.161	3.197	3.232	3.265	3.297	3.327	3.355	
Growth Rate (%)	0.7%	0.7%	0.7%	0.7%	0.7%	0.7%	0.6%	0.6%	0.6%	0.6%	0.6%	
	1.58	1.48	1.36	1.27	1.17	1.14	1.08	1.02	0.98	0.92	0.86	1.17
No specialization												
% of Total	846	915	983	1,051	1,117	1,182	1,247	1,310	1,373	1,435	1,496	
Growth Rate (%)	8.96	8.15	7.44	6.84	6.29	5.87	5.46	5.10	4.79	4.49	4.24	6.15

Major Fields of Study: University

Both Genders		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average, 2006-2016
Educational, recreational and counselling services													
% of Total		90,026	92,068	94,107	96,076	97,900	99,744	101,513	103,204	104,837	106,386	107,845	
Growth Rate (%)		20.6%	20.3%	20.1%	19.9%	19.7%	19.5%	19.4%	19.3%	19.1%	19.0%	18.9%	
		2.48	2.27	2.21	2.09	1.90	1.88	1.77	1.67	1.58	1.48	1.37	1.88
Fine and applied arts													
% of Total		11,183	11,733	12,263	12,781	13,276	13,774	14,260	14,732	15,194	15,640	16,071	
Growth Rate (%)		2.6%	2.6%	2.6%	2.6%	2.7%	2.7%	2.6%	2.7%	2.8%	2.8%	2.8%	
		5.21	4.91	4.52	4.22	3.88	3.75	3.53	3.31	3.13	2.94	2.75	3.83
Humanities and related fields													
% of Total		35,266	36,388	37,432	38,427	39,342	40,260	41,132	41,959	42,750	43,492	44,183	
Growth Rate (%)		8.1%	8.0%	8.0%	8.0%	7.9%	7.9%	7.9%	7.8%	7.8%	7.8%	7.7%	
		3.35	3.18	2.87	2.66	2.38	2.33	2.17	2.01	1.89	1.74	1.59	2.38
Social sciences and related fields													
% of Total		70,443	73,665	76,893	80,053	83,062	86,084	89,019	91,865	94,638	97,313	99,883	
Growth Rate (%)		16.1%	16.2%	16.4%	16.6%	16.7%	16.9%	17.0%	17.1%	17.3%	17.4%	17.5%	
		4.92	4.57	4.38	4.11	3.76	3.64	3.41	3.20	3.02	2.83	2.64	3.68
Commerce, management and business administration													
% of Total		77,149	82,066	86,774	91,363	95,790	100,227	104,570	108,812	112,971	117,022	120,958	
Growth Rate (%)		17.6%	18.1%	18.5%	18.9%	19.3%	19.6%	20.0%	20.3%	20.6%	20.9%	21.2%	
		6.73	6.37	5.74	5.29	4.85	4.63	4.33	4.06	3.82	3.59	3.36	4.80
Agricultural, biological, nutritional, and food sciences													
% of Total		23,376	24,292	25,123	25,923	26,683	27,449	28,193	28,914	29,617	30,295	30,946	
Growth Rate (%)		5.3%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%	5.4%	
		3.77	3.92	3.42	3.19	2.93	2.87	2.71	2.56	2.43	2.29	2.15	2.93
Engineering and applied sciences													
% of Total		51,510	52,776	53,933	55,022	55,989	56,978	57,911	58,786	59,624	60,415	61,160	
Growth Rate (%)		11.8%	11.6%	11.5%	11.4%	11.3%	11.2%	11.1%	11.0%	10.9%	10.8%	10.7%	
		2.56	2.46	2.19	2.02	1.76	1.77	1.64	1.51	1.42	1.33	1.23	1.81
Applied science technologies and trades													
% of Total		966	983	998	1,011	1,022	1,032	1,041	1,049	1,055	1,061	1,064	
Growth Rate (%)		0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	
		1.95	1.78	1.51	1.32	1.05	1.03	0.88	0.74	0.62	0.48	0.33	1.06
Health professions and related technologies													
% of Total		39,242	39,450	39,496	39,481	39,332	39,233	39,083	38,882	38,652	38,382	38,067	
Growth Rate (%)		9.0%	8.7%	8.4%	8.2%	7.9%	7.7%	7.5%	7.3%	7.0%	6.9%	6.7%	
		0.53	0.53	0.12	-0.04	-0.38	-0.25	-0.38	-0.52	-0.59	-0.70	-0.82	-0.23
Mathematics, computer and physical sciences													
% of Total		36,926	38,250	39,478	40,663	41,780	42,902	43,987	45,035	46,054	47,037	47,981	
Growth Rate (%)		8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	8.4%	
		3.84	3.59	3.21	3.00	2.75	2.68	2.53	2.38	2.26	2.13	2.01	2.76
No specialization													
% of Total		1,952	2,032	2,170	2,309	2,445	2,582	2,717	2,850	2,981	3,111	3,238	
Growth Rate (%)		0.4%	0.4%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	
		4.11	4.09	6.76	6.42	5.91	5.59	5.22	4.89	4.61	4.34	4.10	5.09

Major Fields of Study: University (Cont.)

Females	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average, 2006-2016
Educational, recreational and counselling services												
% of Total	61.366	62.913	64.462	65.962	67.358	68.770	70.127	71.426	72.681	73.872	74.991	
Growth Rate (%)	27.6%	27.2%	26.7%	26.4%	26.0%	25.7%	25.4%	25.1%	24.9%	24.6%	24.4%	2.09
Fine and applied arts												
% of Total	7.509	7.907	8.289	8.662	9.020	9.381	9.733	10.076	10.411	10.735	11.048	
Growth Rate (%)	3.4%	3.4%	3.4%	3.5%	3.5%	3.5%	3.5%	3.5%	3.6%	3.6%	3.6%	
Humanities and related fields												
% of Total	5.56	5.31	4.83	4.50	4.13	4.00	3.75	3.52	3.33	3.12	2.91	4.09
Growth Rate (%)	20.157	20.918	21.635	22.321	22.959	23.598	24.209	24.792	25.351	25.878	26.370	
Social sciences and related fields												
% of Total	38.086	40.155	42.238	44.289	46.258	48.239	50.173	52.056	53.897	55.678	57.393	
Growth Rate (%)	17.2%	17.3%	17.5%	17.7%	17.9%	18.0%	18.2%	18.3%	18.4%	18.6%	18.7%	4.34
Commerce, management and business administration												
% of Total	5.86	5.43	5.19	4.86	4.45	4.28	4.01	3.75	3.54	3.31	3.08	
Growth Rate (%)	34.170	37.178	40.084	42.936	45.715	48.502	51.246	53.940	56.591	59.182	61.707	
Agricultural, biological, nutritional, and food sciences												
% of Total	15.4%	16.0%	16.6%	17.2%	17.7%	18.1%	18.6%	19.0%	19.4%	19.7%	20.1%	
Growth Rate (%)	9.53	8.80	7.82	7.11	6.47	6.10	5.66	5.26	4.91	4.58	4.27	6.41
Engineering and applied sciences												
% of Total	12.264	12.900	13.480	14.043	14.582	15.126	15.657	16.174	16.679	17.169	17.640	
Growth Rate (%)	5.5%	5.6%	5.6%	5.6%	5.6%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	3.82
Applied science technologies and trades												
% of Total	6.855	7.031	7.189	7.338	7.457	7.589	7.709	7.817	7.919	8.012	8.095	
Growth Rate (%)	3.1%	3.0%	3.0%	2.9%	2.9%	2.8%	2.8%	2.8%	2.7%	2.7%	2.6%	
Health professions and related technologies												
% of Total	2.80	2.57	2.25	2.07	1.62	1.76	1.59	1.41	1.30	1.17	1.03	1.78
Growth Rate (%)	294	304	312	320	327	334	340	346	352	356	360	
Mathematics, computer and physical sciences												
% of Total	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	
Growth Rate (%)	3.52	3.23	2.83	2.56	2.15	2.14	1.89	1.53	1.31	1.12	2.18	
Mathematics, computer and physical sciences												
% of Total	29.194	29.743	30.173	30.562	30.863	31.192	31.486	31.741	31.973	32.170	32.328	
Growth Rate (%)	13.2%	12.8%	12.2%	11.9%	11.7%	11.4%	11.2%	10.9%	10.7%	10.5%	10.5%	1.10
Mathematics, computer and physical sciences												
% of Total	1.89	1.88	1.45	1.29	0.98	1.07	0.94	0.81	0.73	0.62	0.49	
Growth Rate (%)	11.037	11.559	12.046	12.518	12.968	13.419	13.858	14.284	14.699	15.099	15.482	
No specialization												
% of Total	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	
Growth Rate (%)	5.11	4.73	4.21	3.92	3.59	3.48	3.27	3.07	2.90	2.72	2.54	3.60
No specialization												
% of Total	1.056	1.109	1.191	1.273	1.354	1.434	1.514	1.592	1.669	1.745	1.818	
Growth Rate (%)	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	
No specialization												
% of Total	4.68	4.93	7.41	6.92	6.34	5.96	5.54	5.17	4.83	4.52	4.23	5.50

Major Fields of Study: University (Cont.)

Males	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Average, 2006-2016
Educational, recreational and counselling services												
% of Total	28,660 13.3%	29,156 13.1%	29,645 13.0%	30,115 12.9%	30,542 12.8%	30,975 12.8%	31,387 12.7%	31,778 12.6%	32,156 12.6%	32,514 12.5%	32,854 12.4%	
Growth Rate (%)	1.91	1.73	1.68	1.58	1.42	1.42	1.33	1.25	1.19	1.11	1.04	1.42
Fine and applied arts												
% of Total	3,675 1.7%	3,825 1.7%	3,974 1.7%	4,119 1.8%	4,256 1.8%	4,394 1.8%	4,527 1.8%	4,657 1.8%	4,783 1.9%	4,905 1.9%	5,023 1.9%	
Growth Rate (%)	4.52	4.09	3.89	3.64	3.33	3.24	3.04	2.86	2.71	2.55	2.41	3.30
Humanities and related fields												
% of Total	15,109 7.0%	15,470 7.0%	15,798 6.9%	16,106 6.9%	16,383 6.9%	16,662 6.8%	16,923 6.8%	17,167 6.8%	17,399 6.8%	17,614 6.8%	17,812 6.7%	
Growth Rate (%)	2.52	2.39	2.12	1.95	1.72	1.70	1.57	1.44	1.35	1.24	1.13	1.74
Social sciences and related fields												
% of Total	32,357 15.0%	33,510 15.1%	34,655 15.2%	35,764 15.4%	36,804 15.5%	37,845 15.6%	38,847 15.7%	39,809 15.8%	40,742 15.9%	41,635 16.0%	42,490 16.1%	
Growth Rate (%)	3.84	3.57	3.42	3.20	2.91	2.83	2.65	2.48	2.34	2.19	2.05	2.86
Commerce, management and business administration												
% of Total	42,979 19.9%	44,888 20.2%	46,690 20.5%	48,427 20.8%	50,076 21.1%	51,725 21.3%	53,324 21.6%	54,872 21.8%	56,381 22.0%	57,840 22.2%	59,252 22.4%	
Growth Rate (%)	4.61	4.44	4.01	3.72	3.40	3.29	3.09	2.90	2.75	2.59	2.44	3.39
Agricultural, biological, nutritional, and food sciences												
% of Total	11,113 5.1%	11,392 5.1%	11,643 5.1%	11,881 5.1%	12,101 5.1%	12,324 5.1%	12,537 5.1%	12,740 5.1%	12,938 5.1%	13,126 5.0%	13,306 5.0%	
Growth Rate (%)	2.42	2.51	2.20	2.05	1.85	1.84	1.73	1.63	1.55	1.46	1.37	1.87
Engineering and applied sciences												
% of Total	44,656 20.7%	45,746 20.6%	46,744 20.5%	47,684 20.5%	48,531 20.4%	49,390 20.4%	50,202 20.3%	50,969 20.2%	51,705 20.2%	52,404 20.1%	53,066 20.1%	
Growth Rate (%)	2.52	2.44	2.18	2.01	1.78	1.77	1.65	1.53	1.44	1.35	1.26	1.81
Applied science technologies and trades												
% of Total	672 0.3%	679 0.3%	686 0.3%	691 0.3%	694 0.3%	698 0.3%	701 0.3%	703 0.3%	704 0.3%	704 0.3%	704 0.3%	
Growth Rate (%)	1.28	1.15	0.91	0.76	0.52	0.53	0.39	0.27	0.19	0.06	-0.06	0.55
Health professions and related technologies												
% of Total	11,981 5.5%	11,990 5.4%	11,967 5.3%	11,931 5.1%	11,862 5.0%	11,806 4.9%	11,739 4.7%	11,661 4.6%	11,579 4.5%	11,490 4.4%	11,394 4.3%	
Growth Rate (%)	0.11	0.07	-0.19	-0.30	-0.58	-0.47	-0.57	-0.66	-0.71	-0.77	-0.84	-0.45
Mathematics, computer and physical sciences												
% of Total	25,889 12.0%	26,691 12.0%	27,433 12.1%	28,145 12.1%	28,812 12.1%	29,483 12.1%	30,129 12.2%	30,751 12.2%	31,356 12.2%	31,938 12.3%	32,499 12.3%	
Growth Rate (%)	3.30	3.10	2.78	2.60	2.37	2.33	2.19	2.07	1.97	1.86	1.75	2.39
No specialization												
% of Total	896 0.4%	924 0.4%	979 0.4%	1,036 0.4%	1,092 0.5%	1,148 0.5%	1,203 0.5%	1,258 0.5%	1,312 0.5%	1,366 0.5%	1,420 0.5%	
Growth Rate (%)	3.45	3.09	5.99	5.80	5.39	5.13	4.83	4.56	4.33	4.11	3.92	4.60



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